NEW DISTRIBUTION RECORDS OF THE GREEN TREE ANT *OECOPHYLLA SMARAGDINA* (FABRICIUS) (HYMENOPTERA: FORMICIDAE: FORMICINAE) AND THREE ASSOCIATED LYCAENID BUTTERFLIES

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Abstract

Colonies of the green tree ant *Oecophylla smaragdina* and three associated lycaenid butterflies, *Hypolycaena phorbas* (Fabricius), *Arhopala micale* Boisduval and *Arhopala centaurus* (Fabricius) are recorded from the Gladstone district, Queensland, giving some support to previously anomalous references in Joseph Banks' journal, which reported this ant at Bustard Bay, south-east of Gladstone, beyond the range of other modern records.

Introduction

The green tree ant *Oecophylla smaragdina* occurs throughout coastal and subcoastal forested areas of northern Australia (Lokkers 1986). In eastern coastal areas its distribution encompasses those of five species of lycaenid butterflies, *Hypolycaena phorbas*, *Arhopala micale*, *A. centaurus*, *A. madytus* Frühstorfer and *Liphyra brassolis* Westwood, whose larvae appear to be obligatorily attended by *Oecophylla* (Common 1981). Except for a single reference in Joseph Banks' journal of the 1770 James Cook Endeavour expedition, which reports *Oecophylla* from Bustard Bay (ca 24°-24°10'S), south-east of Gladstone, no record exists of *O. smaragdina* south of the Fitzroy River which reaches the sea at about 23°30'S. Furthermore, no instance of breeding by any of the five associated lycaenid butterflies has been recorded south of the Yeppoon district (ca 23°-23°10'S).

Observations

The author visited Canoe Point Reserve at Tannum Sands (23°57'S 151°22'E), 20 km SE of Gladstone, in early December 1991 and again in January and May 1992. The reserve includes most of the south bank of the Boyne River heads. Vegetation consists of coastal sclerophyll woodland interspersed with several hectares of semi-evergreen microphyll vine forest/thicket, backing onto mangroves along the river margin. Numerous nests of *O. smaragdina* were observed in the foliage of rainforest trees within the patches of vine thicket. Adult individuals of the lycaenid butterflies *H. phorbas* and *Arhopala* sp. were also observed flying along the margins of a path within the vine thicket. During the January visit, a search of young foliage of a rainforest tree *Cupaniopsis* sp. revealed larvae and pupae of *A. centaurus*, actively attended by *Oecophylla* workers. A small number of lycaenid eggs were collected from new shoots of the same tree. Larvae reared from these by the author (using as food flowers and foliage of cultivated *Alectryon coriaceus*) were found to comprise *H. phorbas* and an unrelated lycaenid, *Erysichton lineata* (Murray). During the May visit, numerous adult individuals of *A. micale* were observed settled in the foliage of a small rainforest tree containing active nests of *O. smaragdina*. Several

lepidopterous larvae with an appearance strongly mimicking that of *Oecophylla* workers were also observed resting on the exposed upper surfaces of leaves of adjacent shrubs. These larvae were similar in appearance to those of *Homodes* sp. (Lepidoptera: Noctuidae).

Discussion

A recent distributional study of *O. smaragdina* recorded the Yeppoon district as its southern known modern limit (Lokkers 1986). The known southern limit of breeding of four of the five associated butterflies is also recorded as Yeppoon (Common 1981; Dunn and Dunn 1991). The fifth species, *L. brassolis*, is not known to occur south of Mackay (ca 21°S) (Common 1981; Dunn and Dunn 1991). A single female specimen of the butterfly *A. centaurus* has been recorded from Mary River heads, near Maryborough (ca 25°30'S) (Manskie and Manskie 1989) but, since this species is known to exhibit migratory behaviour in other localities (Moulds 1976), the record is thought to represent a vagrant.

Lokkers (1986) postulated that the distribution of *O. smaragdina* in Australia was limited by the occurrence of favourable minimum temperature regimes and vegetation communities exhibiting interlocking canopies. It is likely that, at the southern limit of its distribution, these criteria are satisfied only within vine forests occurring directly adjacent to the ocean, or in some mangrove communities. The reference to *Oecophylla* in Banks' journal specifically describes its occurrence in a mangrove community. The mangroves of Bustard Bay, some 45 km SE of Tannum Sands, are mostly inaccessible by land and hence no thorough search for *Oecophylla* has been made there. However, a fauna survey of Eurimbula National Park, at the southern end of Bustard Bay, by the Queensland Naturalists' Club in 1989 (Monteith and St Leger Moss 1991) failed to reveal any sign of the ant or its associated butterflies. Lokkers (pers. comm.) also advises that no ants have been located by him in the area of the Town of Seventeen Seventy, near Round Hill Head at the southern end of Bustard Bay (ca. 24°10'S). When Whitley and Musgrave visited the Bustard Bay region in 1957 they also failed to locate the ants (Whitley 1970).

Botanical staff of the Gladstone Botanic Gardens, who have undertaken numerous botanical surveys in the Gladstone area, have recently encountered a population of *O. smaragdina* near the Rundle Range (ca. 23°40'S) NW of Gladstone (B. Braddick, pers. comm.). Similarly to the Tannum Sands populations of Oecophylla, the ants from near the Rundle Range occupy vine forest adjoining mangroves.

The Canoe Point Reserve is small in size and hence very susceptible to degradation by dry season fires, cyclones and human activities. As a result the reserve's insect populations cannot be considered secure in the long term.

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